UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/578,276	01/17/2007	Stephen Bernard Streater	BKYZ 200111US01	1949

27885   7590   03/14/2011
FAY SHARPE LLP
1228 Euclid Avenue, 5th Floor
The Halle Building
Cleveland, OH 44115

EXAMINER
KIM, HEE-YONG

ART UNIT	PAPER NUMBER
2482	

MAIL DATE	DELIVERY MODE
03/14/2011	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

	Application No.	Applicant(s)
Office Action Summary	10/578,276	STREATER, STEPHEN BERNARD
	Examiner	Art Unit	
	HEE-YONG KIM	2482	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE <u>3</u> MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.
- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
  Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on _19 January 2011_.

2a)☒ This action is **FINAL**.   2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) _1-3,5 and 6_ is/are pending in the application.

    4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) _1-3,5 and 6_ is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

    Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

    Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

    a)☐ All   b)☐ Some * c)☐ None of:

      1.☐ Certified copies of the priority documents have been received.

      2.☐ Certified copies of the priority documents have been received in Application No. _____.

      3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

    * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1)☐ Notice of References Cited (PTO-892)

2)☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3)☐ Information Disclosure Statement(s) (PTO/SB/08)
    Paper No(s)/Mail Date _____.

4)☐ Interview Summary (PTO-413)
    Paper No(s)/Mail Date. _____.

5)☐ Notice of Informal Patent Application

6)☐ Other: _____.

DETAILED ACTION

Response to Amendment

1.   This office action is in reply to Applicant's Response dated January 19, 2011.

2.   **Claims 4 and 7 and 8** have been cancelled.

3.   **Claims 1 and 5** have been amended.

4.   **Claims 1-3, 5 and 6** are pending.

Response to Arguments

5.   Objections to Drawing and Specification are withdrawn because new drawing
and specification overcomes the previous objections.

6.   Applicant's arguments with respect to the prior art rejection over **claims 1-3, 5
and 6** have been considered but they are not persuasive.

7.   Regarding **claim 1**, Applicant states (pp.5-8) claim interpretation by bringing
limitation in the specification into claim 1. However, the examiner is allowed to have a
broadest reasonable claim interpretation. As long as prior art teaches the claim (not
specification), the claim is rejected. Applicant argues (pp.6-7) that neither Streater nor
Schwartz discloses calculating distribution output data for the input data and generating
variable length prefix codewords corresponding to the result in a manner which leaves
logical codeword space available at the long end for new codewords for data of lower
frequency when required, and the codeword space is logical but not physical._Examiner
respectfully disagrees. Streater discloses exception codeword which has a distinct
prefixes and is reserved as logical space for rare codewords (paragraph 94). Applicant

further argues (pp.8) that the codewords are continuously updated from time to time in

the invention. So does the prior art (own Huffman codeword at a new frame, paragraph

126).

Claim Rejections - 35 USC § 102

8.   The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that

form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

9.   **Claim 1** is rejected under 35 U.S.C. 102(b) as being anticipated by Streater (US

2003/0,156,651) (hereafter reference as Streater).

Regarding **claim 1**, Streater discloses Method for Reducing Code Artifacts in a

Block Coded Video Signals. Specifically Streater discloses A method of compressing

digital data comprising the steps of:

(i) reading digital data (video image frame, paragraph 10) as series of binary coded

words (series of binary coded words, paragraph 10) representing a context (pixels,

paragraph 11) and a codeword (codewords, paragraph 11) to be compressed;

(ii) calculating distribution output data (distribution of codewords, paragraph 76) for the

input data and generating variable length prefix codewords (exception codeword

followed by uncompressed codeword, paragraph 94) corresponding to the result in a

manner which leaves logical codewords for data of low frequency (rarer codewords,

paragraph 94) when required (exception codeword followed by uncompressed

codeword, paragraph 94); and

(iii) recalculating the codewords from time to time (own Huffman codeword at a new

frame, paragraph 126), in order to continuously update the codewords and their lengths.

Claim Rejections - 35 USC § 103

10.   The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all

obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set
> forth in section 102 of this title, if the differences between the subject matter sought to be patented and
> the prior art are such that the subject matter as a whole would have been obvious at the time the
> invention was made to a person having ordinary skill in the art to which said subject matter pertains.
> Patentability shall not be negatived by the manner in which the invention was made.

11.   **Claims 2-3** are rejected under 35 U.S.C. 103(a) as being unpatentable over

Streater in view of Wang (US 2003/0,169,816) (hereafter referenced as Wang).

       Regarding **claim 2**, Streater discloses everything clamed as applied above (see

claim 2). However Streater fails to disclose in which the codewords are recalculated

each time the number of codewords has doubled.

       In the analogous field of endeavor, Wang discloses Adaptive Universal Variable

Length Codeword Coding for Digital Video Contents. Wang specifically discloses that

VLC table can be updated (*codewords are recalculated*) once there is a significant

change in the probability distribution of an event (paragraph 45) . It was obvious to

consider doubling number of codewords as the indication of significant change in the

probability distribution of codewords, because doubling number of codewords tells that

VLC codes does not fit anymore to current status of video.

Therefore, given this teaching, it would have been obvious to one of ordinary skill in the art at the time invention was made to modify Streater by specifically providing updating VLC table when the number of codewords has doubled, in order to best serve a particular (video) application. The Streater digital video compression, incorporating the Wang updating VLC table when the number of codewords has doubled, has all the features of claim 2.

Regarding **claim 3**, Streater discloses everything clamed as applied above (see claim 1). However Streater fails to disclose in which the codewords are recalculated for every new frame of data.

Wang specifically discloses in which the codewords are recalculated for every new frame of data (Updated UVLC table can be frame-by-frame, paragraph 45), in order to best serve a particular (video) application (paragraph 45).

Therefore, given this teaching, it would have been obvious to one of ordinary skill in the art at the time invention was made to modify Streater by specifically providing updating VLC table for each frame by recalculating codewords, in order to best serve a particular (video) application. The Streater digital video compression, incorporating the Wang updating VLC table for each frame, has all the features of claim 3.

12.   **Claims 5 and 6** are rejected under 35 U.S.C. 103(a) as being unpatentable over Streater, in view of Streater (US 6,195,128) (hereafter referenced as Streater-B).

Regarding **claim 5**, Streater discloses A method of processing digital video information (method of processing digital video information, paragraph 9) so as to

compress it for transmission or storage (compressed format fro transmission or storage, paragraph 9), said method comprising: reading digital data (video image frame, paragraph 10) representing individual picture elements (pixels) (pixel, paragraph 11) of a video frame as a series of binary coded words (series of binary coded words, paragraph 10);

segmenting the image into regions (superblocks, paragraph 87) of locally relatively similar pixels and locally relatively distinct pixels;

establishing a reduced number of possible luminance values (2 Y values, paragraph 89) for each block of pixels (typically no more than four);

carrying out an encoding process (each super-block is encoded, paragraph 69) so as to derive from the words representing individual pixels (YUV information of constituent pixels, paragraph 69), further words describing blocks or groups of pixels (2 Y values, paragraph 89) each described as a single derived word which at least includes a representation of the luminance of a block component of at least eight by eight individual pixels (super-block) (pixel blocks at least 8x8 pixels in size, paragraph 87);

generating variable length codewords (Huffman Coding Super-Block Header), using the method of claim 1, to represent the result of transition (temporal gap, paragraph 127-134); comparing and evaluating the words representing corresponding portions of one frame with another frame (comparing an devaluating the words representing corresponding one frame with another, paragraph 25) or frames in a predetermined sequential order of the elements making up the groups to detect differences and hence changes (in a predetermined sequential order…, paragraph 129);

identifying any of the masks which require updating (identifying any of the masks which

requires updating, paragraph 26) to reflect such differences and choosing a fresh mask

(fresh mask, paragraph 26) as the most appropriate to represent such differences and

storing the fresh mask or mask for transmission or storage (paragraph 26);

using context (depending on their content, paragraph 72) which will be available the

time of decompression to encode the masks (mask can be compressed in a variety of

ways, paragraph 72), the changes in Y values (luminance), U values (chrominance),

and V values (chrominance) (Y, U, V change, paragraph 98-107) and the spatial or

temporal gaps (spatial and temporal gaps, paragraph 128-130) between changed

blocks, combined with the efficient encoding scheme (codeword, 0, 01,001 for gaps

0,1,2, paragraph 131), in order to do more efficient compression coding (paragraph

128).

However, Streater fails to disclose establishing a reduced number of possible luminance

values for each smaller block of pixels (typically no more than four) ;

carrying out an encoding process so as to derive from the words representing individual

pixels, further words describing blocks or groups of pixels each described as a single

derived word which at least includes a representation of the luminance of a block

component of typically two by two individual pixels (mini-block);

establishing a reduced number of possible luminance values for each block of pixels

(typically one or two);

providing a series of changeable stored masks as a means for indicating which of the

possible luminance values are to be used in determining the appropriate luminance
value of each pixel for display.

In the same field of endeavor, Streater-B discloses Video Processing for Storage
or Transmission. Streater-B discloses specifically establishing a reduced number (one
or two Y values for all 2x2 block, col.7, line 54-60) of possible luminance values for each
smaller block of pixels (typically no more than four) ;

carrying out an encoding process (Type 102 Compression, col. 8,, line 8- 51) so as to
derive from the words representing individual pixels (luminance for each-mini-block is
stored as YYYYyyyyffff, col.8, line 18-19), further words describing blocks or groups of
pixels (gaps between updated mini-blocks, col.8, line 23-24) each described as a
single derived word which at least includes a representation of the luminance of a block
component of typically two by two individual pixels (mini-block) (two by two pixel mini-
block, col.8, line 16-17);

establishing a reduced number (one or two Y values for all 2x2 block, col.7, line 54-60)
of possible luminance values for each block of pixels (typically one or two);

providing a series of changeable stored masks (which of y or Y to use, col.7, line 59) as
a means for indicating which of the possible luminance values are to be used in
determining the appropriate luminance value of each pixel for display; and

using variable length codewords (variable length code words, col.8, line 24) to represent
the result of transitions (gaps, col.8, line 23). Since Streater-B uses representing a mini-
block (2x2 pixels) in the superblock compared to 8x8 superblock in Streater , it was

obvious that Streater-B has a higher resolution (two Y values representing a mini-block verse two Y value representing a superblock).

Therefore, it was obvious that the teaching of Streater-B would have led to combine Streater-B coding mini-block in a superblock with Streater, in order to high resolution representation of video compression. The Streater method, incorporating the Streater-B coding mini-block in a superblock, has all the features of claim 5.

Regarding **claim 6**, the Streater method, incorporating the Streater-B coding mini-block in a superblock, as applied to claim 6, discloses in which the method further comprises an adaptive learning process (Streater-B: Learning, col.17, line 40-67; col.18 all lines; col.19, line 1-17) for deriving a relationship between contextual information and codewords requiring compression, and a process for dynamically

Conclusion

13.   Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any

extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of

the advisory action. In no event, however, will the statutory period for reply expire later

than SIX MONTHS from the date of this final action.

14.   Any inquiry concerning this communication or earlier communications from the

examiner should be directed to HEE-YONG KIM whose telephone number is (571)270-

3669. The examiner can normally be reached on Monday-Thursday, 8:00am-5pm EST.

        If attempts to reach the examiner by telephone are unsuccessful, the examiner's

supervisor, Marsha Banks-Harold can be reached on 571-272-7905. The fax phone

number for the organization where this application or proceeding is assigned is 571-

273-8300.

        Information regarding the status of an application may be obtained from the

Patent Application Information Retrieval (PAIR) system. Status information for

published applications may be obtained from either Private PAIR or Public PAIR.

Status information for unpublished applications is available through Private PAIR only.

For more information about the PAIR system, see http://pair-direct.uspto.gov. Should

you have questions on access to the Private PAIR system, contact the Electronic

Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a

USPTO Customer Service Representative or access to the automated information

system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

            .

/HEE-YONG KIM/
Examiner, Art Unit 2482

/Andy S. Rao/

Primary Examiner, Art Unit 2486
March 11, 2011